

## DELIMITEDNESS AND THE LOCATIVE ALTERNATION IN CHINESE

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Recent studies in verb lexicon have focused on the interface between syntax and semantics (Baker, 1988; Dowty, 1991; Grimshaw, 1990; Levin & Rappaport Hovav, to appear; Pinker, 1989; Pustejovsky, 1988; Tenny, 1987, 1989). Verbs, as argument-taking elements, show complex sets of properties. Native speakers can make extremely subtle judgments concerning the occurrence of verb arguments in various syntactic expressions. For instance, speakers of English not only know which alternations in the expressions of arguments, sometimes accompanied by changes of meaning, verbs may participate in, but they also know some verbs which are closely related to each other do not have the same choices. They know that verbs such as spray and load may express their arguments in two different ways, displaying the so-called locative alternation.

- (1) a. Keith sprayed the water onto the wall.
- b. Keith sprayed the wall with water.
- c. Keith loaded groceries into the cart.
- d. Keith loaded the cart with groceries.

But they also know that some verbs which are similar to spray and load do not allow both options. Fill and cover show one possibility, while dump and pour show the other.

- (2) a. \*Tina covered a blanket over the baby.
- b. Tina covered the baby with a blanket.
- c. \*Tina filled coffee into the cup.
- d. Tina filled the cup with coffee.
- e. \*Tina poured the container with water.
- f. Tina poured water into the container.
- g. Tina dumped apples into the cart.
- h. \*Tina dumped the cart with apples.

Other alternations involving the argument's appearance in different syntactic positions include causatives, datives, conatives, and passives. To explain the alternatability among different types of verbs, Tenny's Aspectual Interface Hypothesis explicitly argues that only the aspectual part of cognitive structure is visible to syntax (Tenny, 1987, 1989). This paper will demonstrate that the aspectual property, delimitedness, governs the direct object mapping in the Chinese Locative Alternation.

### Aspectual Analysis of the Locative Alternation in English

The locative alternation involves an exchange in the grammatical function of the verb's two internal arguments. The theme (content) argument, as shown in (3a), may appear in direct object position, with the location (container) argument in oblique position, marked with a locational preposition such as *into* or *onto*. Alternately, the location can appear in direct object position with the theme in oblique position, marked with the preposition *with*, as in (3b).

- (3) a. John sprayed the paint<sub><theme></sub> onto the wall<sub><location></sub>.  
 b. John sprayed the wall<sub><location></sub> with paint<sub><theme></sub>.

As mentioned earlier (see (2)), not all verbs allow this alternation.

- (4) a. push a cart to San Francisco  
 b. \*push San Francisco with a cart  
 c. fill the glass/\*the water with water/\*in the glass

Semantic selection of the direct argument by verbs is one constraint which is associated with the ability to alternate. For example, the verb *fill* requires the container (location) argument to be fillable (4c). That is, the *goal* (location) must be a flat surface or container, and the *theme* must be a material which is removed or applied to that surface or container. Additionally, affectedness also plays a role in the locative alternation.

Researchers observe a holistic effect with the alternation of locative verbs in English (Pinker, 1989; Rappaport & Levin, 1985). For example, in "load the truck with hay," most people have the reading that the truck is full of hay but not with "load the hay onto the truck." Pinker explains this in terms of the general semantic structure of a locative phrase: a location is usually represented as an undifferentiated point. Therefore, if "the truck," is affected, it must be totally affected. However, Tenny argues that "direct argument-hood is associated with the ability of the verb to semantically select the argument, but the aspectual properties associated with direct argument-hood are more important" (Tenny, 1987:281).

Tenny proposes that the direct object argument is constrained to measure out the event described by the verb. The material-like (theme) argument measures out the event by being consumed a little at a time during the course of the event such as "the paint" in (3a); the container or flat surface argument measures out the event by becoming filled with the material over time such as "the wall" in (3b). The ungrammaticality of (4b) is explained as the direct object argument's inability to measure out the event. There is no uniform and consistent change in the argument "San Francisco" under the action "pushing." Instead, the direct object arguments in (3a), (3b), and (4a) all can set up a scale to measure out the event. "The paint" in (3a) is associated with the action denoted by the verb. Likewise with "the wall" in (3b) and "a cart" in (4a).

Both material and instrument, as shown in (5a) and (5b), are possible as indirect objects, but only the material can be a direct argument. This explains the ungrammaticality of (5d) because an instrument can not measure out the event, that is, being consumed a little at a time until it is gone.

- (5) a. spray the wall with water  
 b. spray the wall with a hose  
 c. spray water on the wall  
 d. \*spray a hose on the wall

Under Tenny's view, it is the aspectual differences between materials and instruments, and the aspectual properties of certain types of goals, together with the principle that the direct object argument measures out the event, that make the locative alternation possible or impossible. Additionally, Tenny also argues that aspectual delimitedness plays a role in the alternation.

Delimitedness--the temporal boundedness of an event--is an aspectual property encoding the endpoint of an event associated with the direct object argument. A delimited event is one that the language encodes as having an endpoint in time while a non-delimited event does not. English uses temporal adverbial phrases like "for an hour" and "in an hour" to distinguish delimited and non-delimited events. Delimited events can occur with the temporal adverbial phrase "in an hour," but non-delimited events can not. (6) and (7) are some examples from Tenny (1989):

(6) Delimited

- a. destroy the city (in an hour/\*for an hour)  
 b. climb a tree (in an hour /?for an hour)

## (7) Non-delimited

- a. push the car (\*in an hour/for an hour)
- b. like jazz (\*in an hour/for a day)

In both delimited and non-delimited events as in (6) and (7), the direct object arguments (the city/tree/car/jazz) set up the scale for the direct object argument to measure out the events though (7a) and (7b) do not delimit the event because there is no endpoint in both events. Both (7a) and (7b) can not take the temporal phrase "in an hour". Verbs allowing "in an hour" are assumed to have implicit delimitedness, such as "destroy" and "climb." The non-delimited event described by verbs encoding no implicit delimitedness e.g., "push", however, can become delimited by adding a delimiter.

A delimiter is an element that can be added to a sentence or event to provide delimitedness. For example, a path or goal phrase in English can function as a delimiter to impose delimitedness when added to a event without delimitedness. (8) shows the delimited and non-delimited contexts with the verb "push."

- (8) a. push the car to the gas station (in an hour/\*for an hour)
- b. push the car (\*in an hour/for an hour)

In (8a) the goal phrase "to the gas station" functions as a delimiter to impose an endpoint to the event "pushing the car." With the arrival at the gas station, the event (pushing the car) is delimited. There is no more "pushing" after "the car" arrives at the destination "the gas station" in the event. Tenny points out that there are some linguistic devices that can impose delimitedness on the event (Tenny, 1987). They include verb particles, resultatives, and morphological aspect, see (Tenny, 1987). Resultatives are frequently used and play a crucial role in the Chinese locative alternation, so some English examples are illustrated in (9).

- (9) a. I painted the car a brilliant red in an hour/\*for an hour.
- b. He drank himself into a stupor in an hour/\*for an hour.
- c. \*John ran ragged.

Tenny (1987) argues that resultatives indicate that the endpoint is achieved when the direct object argument is in a certain state. Accordingly, resultatives require "in an hour" and do not permit "for an hour" in the sense of an hour-long duration of the event described by the verb. The appearance of the temporal phrase "in an hour" in (9a) indicates that "a brilliant red" is a delimiting expression and a resultative adjective, which can only be associated with the direct object argument. Likewise with (9b). The ungrammaticality of (9c) is explained as *Ragged*'s incompatibility with the subject. *Ragged* is an object resultative predicate, which can only refer to the object not the subject of the verb. In (9c), however, "John" is the subject (agent) executing the action "running" not the object (patient) undergoing the action.

In summary, Tenny's aspectual interface hypothesis states that aspectual delimitedness is a sufficient condition for the direct object argument and imposed delimitedness can indicate the endpoint of the event. The data from the Chinese locative alternation clearly shows that aspectual delimitedness has a clear effect on the mapping of direct argument.

### The Role of Aspectual Delimitedness in the Locative Alternation in Mandarin Chinese

#### The Locative Alternation in Chinese

In Mandarin Chinese, there are four constructions related to the locative alternation. Two of them co-occur with the BA-construction; two of them are agentless constructions.

Two constructions involve the Ba-construction are shown in (10)<sup>1</sup>.

(10) a. BA-theme (content)

Wo ba shui<sub><theme></sub> zhuang zai pingzi<sub><location></sub> li  
I BA water fill at bottle inside  
(I have filled the bottle with water.)

b. BA-location (container)

Wo ba pingzi<sub><location></sub> zhuang le shui<sub><theme></sub>  
I BA bottle fill ASP water  
(I have filled the bottle with water.)

Both English *fill* and Chinese *fill*-*"zhuang"* have a core meaning describing the event "putting something (material) into a container and the container changes its state (containing something) after the action." But, Chinese *fill*-*"Zhuang"* differs from English *fill* in two respects. First, *"zhuang"* does not necessarily encode the fullness of the container as does English *"fill."* Sentence (10b) does not imply that the bottle is full, but it does imply that there is a certain amount of water in the bottle now.

Secondly, *"zhuang"* is similar to English *"load,"* which can appear in both Ba-theme (content) and Ba-location (container) constructions. Other locative verbs that can appear in both (10a) and (10b) include *spray*-*"pen,"* *glue*-*"nien,"* *plant*-*"zhong,"* *nail*-*"ding,"* *smear*-*"tu,"* *stuff*-*"sai,"* etc. This group of verbs exemplifies the locative alternation in Chinese.

Unlike Chinese *fill/load*, there is a class of verbs (such as *pour*) which can only appear in the Ba-theme construction.

## (11) BA-theme (content) construction

- a.      wo ba shui dao zai pingzi le  
          I BA water pour at bottle ASP  
          I have poured the water into the bottle.)

## BA-location (container) construction

- b.      \*Wo ba pingzi dao le shui  
          I BA bottle pour ASP water  
          (I have poured the water into the bottle.)
- c.      Wo ba hua gua zai chuang shang  
          I ba picture hang at wall on  
          (I have hung the picture on the wall.)
- d.      \*Wo ba chuang gua le hua  
          I ba wall hang ASP picture  
          (I have hung the wall with pictures.)

The verbs *pour*-"dao" and *hang*-"gua" do not allow their location arguments, *bottle*-"pingzi" in (11b) and *the wall*-"chuang" in (11d), to appear in the direct object position which is preverbal in the Ba-construction. Other verbs with this constraint include *park*-"ting," *shoot*-"she," and *leave*-"liu" (e.g., leave something behind).

Constraints on the Locative Alternation in Chinese

The holistic effect found in English locative case does not hold true in Chinese. As in (10b), the Ba-location structure does not implicate that the *goal* (container/location) is totally affected. Tenny's notion of delimitedness, however, provides a better explanation since delimitedness only describes the end state of the direct object argument and does not necessarily require a holistic effect on the *goal* (location/container) argument if the *goal* is the direct object (e.g., "load the truck with hay").

I propose that the nonappearance of some verbs' location argument in the direct object position is associated with the aspectual delimitedness. Verbs that internally encode delimitedness can undergo the alternation; verbs without internal delimitedness, however, can alternate with imposed delimitedness. The imposition of delimitedness makes it possible for the location argument to appear in the direct object position. One piece of evidence in support of this proposition comes from the resultative compound in Chinese.

The resultative compound in Chinese is a verb compound that combines an active verb with a state predicate. The active verb denotes the action and the state predicate describes the result of the action. Regarding Tenny's hypothesis, it is predicted that the Chinese resultative

predicate is a linguistic device that can provide delimitedness. Accordingly, the addition of a resultative predicate to a main verb can change a non-delimited event to a delimited one. If so, the location argument should be allowed to appear in the direct object position after adding a delimiter to the event.

- (12) a. Wo ba pingzi dao man le shui  
           I BA bottle pour full ASP water  
           (I have poured the water into the bottle, and the bottle is full of water.)

implicate--> On the wall are three pictures.

The resultative predicate, full-"man" in (12), is attached to the verb pour-"dao." With the existence of the imposed delimitedness by the resultative predicate full-"man," which describes the endstate of the location argument, (12) becomes acceptable. Similar to the resultative predicate (e.g., full-"man" in "dao man"), quantifiers can impose delimitedness, too. The use of scale (measurement) expressions in (13), three-"san-fu," explicitly measures out the event over time and delimits the event "hanging." (13) does not implicate that the wall is full of pictures, but the end state of the wall has been reached after hanging three pictures. This is another example showing that delimitedness can better explain the argument mapping than affectedness. With regard to the affectedness account, full-"man," which describes the holistic effect, should not be allowed in the structure with location (goal/container) object (e.g., "fill the cup with water") since the affectedness analysis implies that the structure with location (goal/container) object already denotes the fullness of the direct object. Double-marking the holistic effect is redundant. The acceptance of full or quantifiers in sentences like (12) and (13) shows that holistic effect is not necessarily encoded by the structure with location (goal/container) object.

- (13) Wo ba chuang gua le san-fu hua  
       I BA wall hang ASP three CL picture  
       (I have hung three pictures on the wall.)

The fact that the temporal adverbial phrase "in an hour/in a minute" can occur with fill-type verbs and pour-type resultative compound verbs in Chinese indicates the requirement of delimitedness in Chinese locatives.

- (14) a. yi xiao-shi nei wo ba chuang peng le chi  
           one hour in I BA wall spray ASP paint  
           (I have sprayed the paint onto the wall in an hour.)  
       b. yi xiao-shi nei wo ba shui dao zai pingzi li  
           one hour in I BA water pour ASP bottle inside  
           (I poured the water into the bottle in an hour.)  
       c. yi xiao-shi nei wo ba suoyou de pingzi dou zhuang le shui  
           one hour in I BA all de bottle all fill ASP water  
           (I have filled all of the bottles with water in one hour.)

- d. yi fen-zhong nei wo ba shui zhuang zai pingzi li  
 one minute in I BA water fill at bottle inside  
 (I have filled the bottle with water in one minute.)
- e. \*yi xiao-shi nei wo ba pingzi dao shui le  
 one hour in I BA bottle pour water ASP  
 (I have poured the water into the bottle in one minute.)

The ungrammaticality of (14e) shows the lack of delimitedness. Moreover, not only can the temporal phrase "in an hour" appear in the Ba-location construction with the verb fill-zhuang," as shown in (14a) and (14c), but it can also occur with the Ba-theme construction, as in (14b) and (14d). This shows that delimitedness is a necessary condition for the locative alternation in Chinese.

The ungrammaticality of (15) also shows that only one delimiter is allowed in one event.

- (15) a. \*Wo ba hua gua man zai chuang shang  
 I ba picture hang full ASP wall on  
 (I hung the pictures full on the wall.)
- b. \*Wo ba chuang gua man le san fe hua.  
 I ba wall hang full ASP three picture.  
 (I hung three pictures on the wall and the wall was full of pictures.)

In accordance with the affectedness analysis, (15a) should be allowed since the holistic effect is not a semantic element in the structure with theme (material) object. The unacceptance of (15) again shows the crosslinguistic implausibility of the affectedness account. Instead, the delimitedness account correctly predicts the ungrammaticality of (15a). Because the locational phrase "zai chuang shang" is the endpoint of the event, the delimiter full is not allowed. This indicates that only one endpoint is allowed in one event. Likewise with (15b), which has two delimiters.

#### The Role of Delimitedness in Location-Oriented and Locatum-Oriented Constructions in Chinese

In addition to the locative alternation with the Ba-construction, there are two other constructions in Chinese related to the locative alternation. These constructions contain no agent subjects in the surface structure.



## (16) Locatum-oriented structure

- a. shui zhuang zai pingzi li.  
 water fill at bottle inside  
 (The water has been put into the bottle.)

## Location-oriented structure

- b. Pingzi zhuang shui le.  
 bottle fill water ASP  
 (The bottle has been filled with water.)

(16a) is locatum-oriented structure because locatum is the surface subject, and (16b) is location-oriented structure since the surface subject is a location. Both structures describe the state of the surface subject. Whether or not the surface subject is the direct object argument in deep structure still needs further exploration, but it is evident that both structures describe the state of the surface subject after undergoing the action of the verb. The locatum-oriented structure indicates the surface subject's ("water") change of location after the action *filling*, as in (16a), and the location-oriented structure (16b) depicts the state of the surface subject ("bottle") after being filled with water.

Exceptions are also found as in the locative alternation with the Ba-construction. Pour-type verbs can not appear in a location-oriented structure.

- (17) a. Shui dao zai pingzi li le.  
 water pour at bottle inside ASP  
 (The water has been poured into the bottle.)
- b. \*Pingzi dao shui le.  
 bottle pour water ASP  
 (The bottle has been poured with water.)
- c. \*Chiang gua hua le  
 wall hang picture ASP  
 (The wall was hung with pictures.)

However, the location argument in location-oriented structure such as (17b) and (17c) can appear in the surface subject position by adding a delimiter.

- (18) a. Yi fen-zhong nei pingzi dao man shui le  
 one minute in bottle pour full water ASP  
 (The bottle has been poured full of water in a minute.)
- b. Yi fen-zhong nei chiang gua man hua le  
 one minute in wall hang full picture ASP  
 (The wall was hung full of pictures in one minute.)

The resultative predicate *full-*"man" in (18) provides an endpoint for the event over time and licenses the appearance of the location argument in the surface subject position. The acceptability of "in a minute" indicates the event is delimited.

The nature of location-oriented and locatum-oriented structures still needs further investigation, but delimitedness at least in part plays a role in determining the appearance of arguments in locatum-oriented and location-oriented structures.

### Conclusions

This paper demonstrates that aspectual delimitedness, in the Mandarin Chinese locative case, is visible to the syntax. The syntactic behavior of locatives shows how aspectual delimitedness can have an effect on the mapping of arguments into syntax. On the one hand, the imposition of delimitedness on events by the addition of a resultative predicate licenses the appearance of Chinese *pour*-like verbs in the Ba-location construction and location-oriented structure. The appearance of the temporal phrase such as "in an hour" in the nondelimited context after adding a delimiter, on the other hand, indicates that delimitedness determines at least in part the syntactic argument mapping. Only one delimiter is allowed in a single event and delimitedness is a necessary condition for the locative alternation with the Ba-construction in Chinese. Delimitedness also plays a role in location-oriented and locatum-oriented constructions. Further investigation on the nature of locatum-oriented and location-oriented structures might provide a clearer picture on the role of delimitedness in mapping direct object arguments.

### Acknowledgements

The author would like to thank Dr. Clifton Pye and Dr. Sara T. Rosen for their encouragement and valuable comments on this paper.

## Notes

<sup>1</sup>The BA-construction is a construction which requires the direct object argument to occur preverbally (see Goodall, 1990; Huang, 1982, Li & Thompson, 1981 for different analyses). (1) provides examples with and without Ba.

- (1) a. Wongwu sha le Lisi.  
       Wongwu kill ASP Lisi  
       (Wongwu killed Lisi.)
- b. Wongwu ba Lisi sha le.  
       Wongwu Ba Lisi kill ASP  
       (Wongwu killed Lisi.)
- c. \*Wongwu ba Lisa ai le.  
       Wongwu ba Lisa love ASP  
       (Wongwu loves Lisa.)

As shown in (1b), the direct object argument "Lisi" can appear preverbally in the Ba construction. The Ba-construction also requires the direct object argument to be an affected object that undergoes a change of state in the event described by the verb. This explains the ungrammaticality of (1c).



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